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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte EIZO MARUYAMA,
YUKITERU SUGIYAMA, KENICHI SHIKATA,
KEIJI SHIBATA, and HIDEAKI UEOKA

Appeal 2015-003008
Application 12/281,402
Technology Center 1700

Before ADRIENE LEPIANE HANLON, TERRY J. OWENS, and
JAMES C. HOUSEL, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

The Appellants filed an appeal under 35 U.S.C. § 134 from an Examiner's decision finally rejecting claims 1–7, 10–12, and 19–21.¹ A hearing was held on March 14, 2017. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

¹ Claims 13, 14, and 16–18 are also pending but have been withdrawn from consideration.

The claims on appeal stand rejected as follows:

(1) claims 1, 3, 6, and 10–12 under 35 U.S.C. § 103(a) as unpatentable over Hara² in view of Burdick et al.;³ and

(2) claims 2, 4, 5, 7, and 19–21 under 35 U.S.C. § 103(a) as unpatentable over Hara in view of Burdick and Nicolas et al.⁴

The Appellants present arguments in support of the separate patentability of each of the independent claims on appeal (i.e., claims 1, 2, 3, and 5). We address those claims below.

B. DISCUSSION

1. Claim 1

Claim 1 reads as follows:

1. A process for producing a purified tea extract, comprising *adsorbing a tea extract on a synthetic adsorbent*, washing the synthetic adsorbent with a basic aqueous solution or ethanol at a solvent concentration of from 0 to 5 wt%, contacting the synthetic adsorbent with ethanol at a solvent concentration of from 10 to 80 wt% to elute non-polymer catechins, and then *bringing the eluate into contact with activated carbon in ethanol*, wherein the synthetic adsorbent is an acrylic resin, methacrylic resin, polyvinyl resin or styrene resin.

App. Br., Claims Appendix i (emphasis added).⁵

The Examiner finds Hara teaches a process for purifying tea extract. The Examiner finds Hara teaches treating a concentrated solution of tea extract with activated carbon *before* subjecting the extract to a liquid chromatographic

² US 4,613,672, issued September 23, 1986 (“Hara”).

³ US 7,012,149 B2, issued March 14, 2006 (“Burdick”).

⁴ US 5,820,901, issued October 13, 1998 (“Nicolas”).

⁵ Appeal Brief dated June 27, 2014.

treatment. Final 2–3 (citing Hara, col. 2, ll. 53–57 and col. 2, l. 64–col. 3, l. 3).⁶ In contrast, claim 1 recites that a tea extract is adsorbed on a synthetic adsorbent *before* bringing the eluate into contact with activated carbon. App. Br., Claims Appendix i. Nonetheless, the Examiner concludes:

[I]t would have been obvious to one having ordinary skill in the art to switch the order or [sic, of] operations. To switch the order of performing process steps, i.e. the order of bringing the solutions in contact prior to step containing use of activated carbon, would be obvious absent any clear and convincing evidence and/or arguments to the contrary

Final 3. The Examiner relies on MPEP § 2144.04 and *In re Gibson*, 39 F.2d 975 (CCPA 1930) for support. Final 3.

In *Gibson*, the Court stated that “[i]t is conceded that the [prior art] discloses the same constituents used in substantially the same proportions [as claimed]. The only claimed difference between appellant and [the prior art] is the process or order in which the constituents are put together.” 39 F.2d at 976. The Court agreed with the Board that “the proper sequence of adding the three ingredients to obtain the most satisfactory mixture of three constituents is within the expected skill and judgment of a mechanic and such choice of sequence does not involve invention in making a mix of the constituents named in [the prior art].” *Gibson*, 39 F.2d at 976.

Similarly, in *In re Burhans*, 154 F.2d 690, 692 (CCPA 1946), the Court determined that the claimed order of steps was not patentable “in the absence of any proof in the record that the order of performing the steps produces any new and unexpected results.”

In this case, the Appellants direct our attention to a Declaration of Eizo Maruyama under 37 C.F.R. § 1.132 dated December 13, 2012 (“Maruyama

⁶ Final Office Action dated January 3, 2014.

Declaration”). The Appellants argue that the Maruyama Declaration “illustrates the criticality of the order of performing the claimed steps.” App. Br. 6. More specifically, the Appellants argue:

[I]f the treatment with the synthetic adsorbent is conducted after the treatment with the activated carbon, it leads to an undesirable color tone. The present invention, however, wherein a specific process order of conducting the treatment with the synthetic adsorbent after the treatment with the activated carbon, unexpectedly provides a dramatically improved color tone. (see Declaration at paragraphs 7-10)[.]

App. Br. 6.

The Examiner “admits there is a difference, it just is not unexpected.” Ans. 13.⁷ The Examiner finds that “[m]aking alterations in factors regarding the separation techniques . . . is well known within the art and obvious to have made changes as claimed Such conditions like the pH, time it takes the solution to pass through a column, affect the contaminants removed and the desired eluate for example.” Ans. 13.

In response, the Appellants argue:

[T]hese allegations have no basis or bearing in this case. The fact is that the Declaration provides a clear and direct comparison between the invention as claimed and the method that is disclosed in the cited art. The Declaration also shows that the claimed order of steps unexpectedly provides a dramatically improved color tone. There is nothing in any of the cited art that would permit the artisan to foresee this result and the Examiner has offered no reasons to rebut the statement of unexpected results in the Declaration.

Reply Br. 10⁸.

⁷ Examiner’s Answer dated November 7, 2014.

⁸ Reply Brief dated December 19, 2014.

The Appellants' arguments are persuasive of reversible error. The Maruyama Declaration presents data for Test A, Test B, and Examples 1 and 2 from the Appellants' Specification. According to the Maruyama Declaration:

Experiment of Test A is conducted by transposing the orders of "treatment with the synthetic adsorbent" and "the treatment with the activated carbon" described in Example 1 according to the present application into the inverse orders. . . . [E]xperiment B is conducted by transposing the orders of "treatment with the synthetic adsorbent" and "the treatment with the activated carbon" described in Example 2 according to the present application into the inverse order.

Maruyama Decl. ¶ 8.

The Maruyama Declaration states that "[t]he present invention . . . wherein a specific process order of conducting the treatment with the synthetic adsorbent after the treatment with the activated carbon, unexpectedly provides a dramatically improved color tone." Maruyama Decl. ¶ 10.

The Examiner finds "[t]he declaration isn't commensurate in scope with the claims." Ans. 12. The Examiner, however, does not explain, in any detail, why "[t]he declaration isn't commensurate in scope with the claims." *See* Ans. 12.

The Examiner also finds the declaration "offers [no] comparative data sourced from the applied art." Ans. 12. More specifically, the Examiner explains that "[t]he declaration . . . shows comparisons to what happens when the subjection of the extract to synthetic adsorbent is performed last versus first as claimed, which is not pertinent to the way the Examiner applied the combinations of at least Hara and Burdick." Ans. 12.

As we understand it, the Examiner would have the Appellants compare the claimed invention to the process of Hara, as modified by the Examiner, wherein a tea extract is adsorbed on a synthetic adsorbent and the eluate is subsequently brought into contact with activated carbon. However, such a comparison amounts

to comparing the claimed invention to itself and is not required to show unexpected results.⁹ See App. Br. 11 (“the Examiner is looking for Appellants to compare their invention to itself rather than what Appellants actually did, which is [to] compare [their invention] to a representation of the Hara disclosure”).

On balance, the evidence of record weighs against the Examiner’s conclusion of obviousness. Therefore, the § 103(a) rejections of independent claim 1 and dependent claims 4, 6, 7, 10–12, and 19 are not sustained.¹⁰

2. Claim 3

Claim 3 reads as follows:

3. A process for producing a purified tea extract, comprising adsorbing a tea extract on a synthetic adsorbent, washing the synthetic adsorbent with ethanol at a solvent concentration of from 0 to 5 wt%, and then contacting the synthetic adsorbent with a basic aqueous solution or ethanol at a solvent concentration of from 10 to 80 wt% to fractionate a tea extract *having a percentage of non-gallates as non-polymer catechins in a range of from 55 to 100 wt% and a caffeine/non-polymer catechins of from 0 to 0.15*, wherein the synthetic adsorbent is an acrylic resin, methacrylic resin, polyvinyl resin or styrene resin.^[11]

App. Br., Claims Appendix i (emphasis added).

The Examiner finds Hara teaches “bringing a washing basic aqueous or organic solvent solution into contact with tea extract” but does not teach “bringing

⁹ See *In re Chapman*, 357 F.2d 418, 422 (CCPA 1966) (Appellant not required to compare “the results of the invention with the results of the invention”).

¹⁰ The Examiner does not rely on Nicolas to cure the deficiency in the combination of Hara and Burdick identified above.

¹¹ We interpret the claim limitation “caffeine/non-polymer catechins of from 0 to 0.15” recited in claim 3 to mean that a ratio of caffeine to non-polymer catechins is from 0 to 0.15. See Spec. 6, ll. 1–7.

the solutions into contact with the synthetic adsorbent” as recited in claim 3. Final 6.

The Examiner finds Burdick teaches “contacting [a] synthetic adsorbent with ethanol at a solvent concentration of from 10 to 80 wt% to equilibrate a mixture and purify the EGCG [(–)-epigallocatechin gallate] tea in the chromatography column.” Final 6 (citing Burdick Example 4). The Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify Hara’s process to purify the EGCG tea using the synthetic adsorbent disclosed in Burdick. Final 7.

The Examiner finds:

The combination [of Hara and Burdick] teaches bringing the solutions into contact with the synthetic adsorbent . . . to thus *inherently* fractionate a tea extract having a percentage of non-gallates as non-polymer catechins in a range from 55 to 100% and a caffeine/non-polymer catechins of not greater than 0.15.

Final 7 (emphasis added).

The Appellants argue:

The present invention defines that a percentage of *non-gallates* is from 55 to 100 %. Burdick is intended to obtain a gallate-type catechin. Thus, in view of a percentage of non-gallates, the disclosure of Burdick teaches away from the present invention. . . . [T]he present invention relates to a process for producing the product with a high percentage of the non-gallates, whereas Burdick relates to a process for producing the product with a high percentage of gallates. In this regard, Appellants point to Example 2 of Burdick which provides a percentage of non-gallates of 7.3 %.

App. Br. 12 (emphasis and footnote omitted).

In response, the Examiner finds Hara “teaches isolated epicatechin which would read on the percentage claimed.” Ans. 13 (citing Hara, col. 3, ll. 6–13). The portion of Hara relied on by the Examiner does not identify a percentage of

non-gallates as non-polymer catechins separated by the disclosed liquid chromatographic treatment. Rather, Hara merely discloses that tea catechins are separated into four substances, i.e., epicatechin, epigallocatechin, epicatechin gallate, and epigallocatechin gallate. Hara, col. 3, ll. 6–36.

On this record, the Examiner has not provided a sufficient factual basis to support a finding that Hara’s process, either alone or in combination with the synthetic adsorbent disclosed in Burdick, *inherently* results in fractionating a tea extract having a percentage of non-gallates as non-polymer catechins within the range recited in claim 3. For that reason, the § 103(a) rejection of claim 3 is not sustained. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (examiner bears the initial burden of presenting a prima facie case of unpatentability).

3. Claim 2

Claim 2 reads as follows:

2. A process for producing a purified tea extract, comprising adsorbing a tea extract on a synthetic adsorbent, eluting said tea extract with a basic aqueous solution by contacting the synthetic adsorbent with said basic aqueous solution to elute non-polymer catechins, *adjusting the pH of the eluate to 7 or lower*, concentrating the eluate, and then subjecting the eluate to solid-liquid separation to remove precipitated and suspended matters, wherein the synthetic adsorbent is an acrylic resin, methacrylic resin, polyvinyl resin or styrene resin.

App. Br., Claims Appendix i (emphasis added).

The Examiner finds Hara does not teach adjusting the pH of the eluate to 7 or lower as recited in claim 2. Final 10. Thus, the Examiner turns to Nicolas. The Examiner finds Nicolas “teaches that the finalized tea extract would have the pH claimed (4.5-5.5); hence the pH would had to have been adjusted at some point.” Final 10 (citing Nicolas, col. 5, ll. 41–43). Based on the teachings in Nicolas, the

Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify the process of Hara to include the step of adjusting the pH as claimed. Final 10.

The Appellants argue that the pH disclosed in Nicolas relates to the pH of a reconstituted tea powder, not the pH of the eluate. App. Br. 16. Claim 2 recites that the pH of the *eluate* is adjusted to 7 or lower. The Examiner does not direct us to any portion of Nicolas disclosing an eluate having a pH within the claimed range.¹² Rather, the Examiner merely speculates that “to adjust the pH of the solution [in Nicolas within the claimed range] would have been conceivably reached at some point.” Ans. 14. Such speculation is not sufficient to establish inherency or obviousness. *See In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981) (“Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” (citing *Hansgirk v. Kemmer*, 102 F.2d 212, 214 (CCPA 1939))); *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”).

The § 103(a) rejection of independent claim 2 and dependent claims 20 and 21 is not sustained.

4. Claim 5

Claim 5 reads as follows:

¹² The Examiner finds Nicolas teaches eluting the tea extract in Example 1. Ans. 15 (citing Nicolas col. 6, ll. 10–15). However, the portion of Nicolas relied on by the Examiner is directed to determining the enzymatic activity of the tannase, not preparing a tea extract. *See* Nicolas, col. 5, l. 60–col. 6, l. 13.

5. A process for producing a purified tea extract, comprising *treating a tea extract with an enzyme having tannase activity, adsorbing the tea extract on a synthetic adsorbent*, and then eluting said tea extract with a basic aqueous solution by contacting the synthetic adsorbent with said basic aqueous solution to elute non-polymer catechins, wherein the synthetic adsorbent is an acrylic resin, methacrylic resin, polyvinyl resin or styrene resin.

App. Br., Claims Appendix ii (emphasis added).

The Examiner finds Hara does not teach treating a tea extract with an enzyme having tannase activity as recited in claim 5. Final 11. The Examiner, however, finds Nicolas teaches the claimed treating step. Final 11–12. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify Hara’s process to include a tannase treatment step for the reasons provided by Nicolas (i.e., to reduce the formation of tea cream¹³). Final 12.

The Examiner also finds Hara does not teach adsorbing a tea extract on a synthetic adsorbent as recited in claim 5. Final 12. The Examiner finds Burdick teaches that limitation. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify Hara’s process “to include a synthetic adsorbent as claimed because it aids in separating EGCG via chromatography.” Final 12. The Examiner finds the combination of Hara and Burdick “teaches bringing [a basic aqueous] solution into contact with the synthetic adsorbent, to inherently elute non-polymer catechins.” Final 12.

The Appellants argue that “neither Hara nor Nicolas disclose *separately hydrolyzing*^[14] followed by adsorption on a synthetic adsorbent with elution by

¹³ Nicolas discloses that “insoluble components are commonly designated by the expression ‘tea cream.’” Nicolas, col. 1, ll. 20–21.

¹⁴ The treating step recited in claim 5 is a hydrolysis step. See Spec. 11, ll. 20–26 (disclosing that hydrolysis can be conducted by treatment with an enzyme having tannase activity).

contacting with a basic aqueous solution.” App. Br. 16 (emphasis added). The Appellants argue that Nicolas immobilizes tannase on a synthetic adsorbent and “specifically caution[s] against adsorption of the tea extract to the adsorbent with the immobilized tannase.” App. Br. 17 (emphasis omitted).

The Appellants’ argument fails to appreciate the rejection on appeal. The Examiner does not rely on Nicolas to teach the adsorption step recited in claim 5. Rather, the Examiner finds Nicolas teaches the claimed treatment step and finds Hara in combination with Burdick teaches the claimed adsorption step. *See* Ans. 15–16 (finding that Hara and Burdick teach the claimed adsorption step and Nicolas teaches a separate hydrolysis treatment step that “provides a benefit in affecting tannase and effecting enzymatic activity”). On this record, the Appellants have not shown that one of ordinary skill in the art would have been discouraged from including *both* the claimed treatment step *and* the claimed adsorption step in Hara’s process. Therefore, the § 103(a) rejection of claim 5 is sustained.

C. DECISION

The Examiner’s decision to reject claims 1, 3, 6, and 10–12 under 35 U.S.C. § 103(a) as unpatentable over Hara in view of Burdick is reversed.

The Examiner’s decision to reject claims 2, 4, 7, and 19–21 under 35 U.S.C. § 103(a) as unpatentable over Hara in view of Burdick and Nicolas is reversed.

The Examiner’s decision to reject claim 5 under 35 U.S.C. § 103(a) as unpatentable over Hara in view of Burdick and Nicolas is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED-IN-PART